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Makarov et al.(10) **Pub. No.: US 2009/0321655 A1**(43) **Pub. Date: Dec. 31, 2009**(54) **ION TRANSFER TUBE WITH SPATIALLY
ALTERNATING DC FIELDS**(60) Provisional application No. 60/857,737, filed on Nov.
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Chernogolovka (RU)**Publication Classification**(51) **Int. Cl.****H01J 3/18** (2006.01)**H01J 49/04** (2006.01)(52) **U.S. Cl.** **250/396 R; 250/288**

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ABSTRACT

An ion transfer arrangement for transporting ions between higher and lower pressure regions of a mass spectrometer includes an electrode assembly (120) with a first plurality of ring electrodes (205) arranged in alternating relation with a second plurality of ring electrodes (210). The first plurality of ring electrodes (205) are narrower than the second plurality of ring electrodes (210) in a longitudinal direction, but the first plurality of ring electrodes have a relatively high magnitude voltage of a first polarity applied to them whereas the second plurality of ring electrodes (210) have a relatively lower magnitude voltage applied to them, of opposing polarity to that applied to the first set of ring electrodes (205). In this manner, ions passing through the ion transfer arrangement experience spatially alternating asymmetric electric fields that tend to focus ions away from the inner surface of the channel wall and towards the channel plane or axis of symmetry.

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